HNRS 2040: Topics in the Life Sciences: Tree of Life

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Course description:
This course focuses on human relationships with trees through the lenses of science, storytelling, and metaphor. We will read the epic novel, The Overstory by Richard Powers. As we are introduced to the human characters, we will also learn the underlying biology of forest communities. We will explore themes of human relationships with the natural world, environmentalism, activism, and the roles of science and technology.

- Required Materials: The Overstory by Richard Powers

Course-Specific Learning Outcomes:

- Students will define and explain key concepts in the life sciences following the General Education outcomes.
- Students will be able to comprehend the interconnection between environmental, social, and economic systems in relation to sustainability.
- Critically analyze how The Overstory’s fictional character’s development, relationships, and perspectives, are changed by their interactions with trees.
- Students will use their understanding of concepts from the class to propose an informed answer to the question: How do artistic and scientific portrayals of plant relationships help us understand human roles in the ecosystem and relate to your own life?

Topics:

- Ways of knowing, including science and storytelling.
- Biology of plants: their evolution, metabolism, and contributions to the world we live in.
- Short local field trips introducing students to plant communities near campus.
- Management of forest resources, their contributions to society, and the economy.
- Exploring the roots and outcomes of environmentalism.
- Studying and practicing the development of fiction and writing techniques through the lenses of science and sustainability.

Assignments (details will be provided in class and on Canvas as assignments are posted):

- Three quizzes on LS outcomes: 10%
- Field notes (due each Monday): 10%
- Reading journal (due each Wednesday): 15%
- Four mini-assignments (1-2 pages, may allow other presentation media): 25%
- Participation & attendance, including field trips: 15%
- Signature Assignment (3-5 pages with revisions): How do artistic and scientific portrayals of plant relationships help us understand human roles in the ecosystem and relate to your own life? 25%

Field trips:
There will be two Saturday field trips, including gentle hikes near Ogden. Their dates will be announced within the first week of classes.
<table>
<thead>
<tr>
<th>Week</th>
<th>Readings</th>
<th>In-class topics/activities</th>
<th>Assignments</th>
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</thead>
<tbody>
<tr>
<td>8/30-9/3</td>
<td>Roots - Nicholas 1-24</td>
<td>Introductions, origin stories, practice field observations, ecosystem services (LS-8)</td>
<td>Field and reading journals</td>
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<td>(Monday Labor Day)</td>
<td>Roots - Mimi, Adam 24-64</td>
<td>Science and other ways of knowing (LS-1), plant intelligence</td>
<td>Field and reading journals</td>
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<td>9/13-9/17</td>
<td>Roots - Ray &amp; Dorothy, Douglas 64-91</td>
<td>Ecosystem services (LS-8), photosynthesis (LS-6), character development Saturday Sept 18 local field trip</td>
<td>Field and reading journals, mini-essay 1</td>
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<td>9/20-9/24</td>
<td>Roots - Neelay 91-112</td>
<td>Data (LS-4), Integration of Science (LS-2)</td>
<td>Field and reading journals, LS Quiz 1</td>
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<tr>
<td>9/27-10/1</td>
<td>Roots - Patricia, Olivia 112-153</td>
<td>Levels of Organization (LS-3), Science &amp; Society (LS-3), Plant communication</td>
<td>Field and reading journals, mini-essay 2</td>
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<tr>
<td>10/4-10/8</td>
<td>Trunk 153-204</td>
<td>Levels of Organization(LS-3), Evolution (LS-7), storytelling</td>
<td>Field and reading journals</td>
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<tr>
<td>10/11-10/15</td>
<td>Trunk 204-267</td>
<td>Mon Oct 11 Hal Crimmel, English Evolution (LS-7), rights of nature, finding your voice</td>
<td>Field and reading journals, LS Quiz 2</td>
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<td>10/18-10/21 (Friday Fall Break)</td>
<td>Trunk 267-314</td>
<td>Evolution (LS-7), DNA, and intellectual property</td>
<td>Field and reading journals</td>
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<td>10/25-10/29</td>
<td>Trunk 314-352</td>
<td>Oct 25 Darren Parry, Shoshone Forest structure (LS-8), critical analysis of fiction Saturday Oct 30 local field trip</td>
<td>Field and reading journals, mini-essay 3</td>
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<td>11/1-11/5</td>
<td>Crown 352-410</td>
<td>Plants and belonging to a place, developing an essay</td>
<td>Field and reading journals, LS Quiz 3</td>
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<tr>
<td>11/8-11/12</td>
<td>Crown 410-442</td>
<td>Activism, politics, taking sides</td>
<td>Field and reading journals</td>
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<tr>
<td>11/15-11/19</td>
<td>Crown 442-472</td>
<td>Sustainability definitions and stories, concept maps to organize thoughts</td>
<td>Field and reading journals, mini-essay 4</td>
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<td>11/22-11/24 (Thanksgiving)</td>
<td>(none)</td>
<td>Developing ideas for the final essay</td>
<td>(none)</td>
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<tr>
<td>11/29-12/3</td>
<td>Seeds 472-502</td>
<td>Peer review, technology’s role in the economy, society, science, the future</td>
<td>Field and reading journals, draft essay for peer review</td>
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<td>12/6-12/10</td>
<td>(none)</td>
<td>Economic, social, and scientific fallout from the Timber Wars, landscape planning and land management</td>
<td>(none)</td>
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**Life Science General Education Outcomes:**

- Nature of science. Scientific knowledge is based on evidence that is repeatedly examined, and can change with new information. Scientific explanations differ fundamentally from those that are not scientific.
- Integration of science. All natural phenomena are interrelated and share basic organizational principles. Scientific explanations obtained from different disciplines should be cohesive and integrated.
- Science and society. The study of science provides explanations that have significant impact on society, including technological advancements, improvement of human life, and better understanding of human and other influences on the earth’s environment.
- Problem solving and data analysis. Science relies on empirical data, and such data must be analyzed, interpreted and generalized in a rigorous manner.
- Levels of organization: All life shares an organization that is based on molecules and cells and extends to organisms and ecosystems.
- Metabolism and homeostasis: Living things obtain and use energy, and maintain homeostasis via organized chemical reactions known as metabolism.
- Genetics and evolution: Shared genetic processes and evolution by natural selection are universal features of all life.
- Ecological interactions: All organisms, including humans, interact with their environment and other living organisms.

**Policies:**

Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in room 181 of the Student Services Center. SSD can also arrange to provide course materials (including the syllabus) in alternative formats if necessary. For more information about the SSD contact them at 801-626-6413, ssd@weber.edu, or departments.weber.edu/ssd

Brian Pilcher, learning strategist in the College of Science, can help you with learning skills such as time management, study methods, test taking, and test anxiety. He is located in TY 201D when the pandemic settles out enough for face-to-face appointments, but Zoom discussions are a sure way to visit. Either way, make an appointment at https://brianpilcher.youcanbook.me

Any form of academic dishonesty (cheating, plagiarism, etc.) will not be tolerated. Proof of academic dishonesty will result in a failing grade (E) for the course.

**FALL 2021 -- Student Acknowledgment of Coronavirus Mitigation Protocols**

I will contribute to the health and safety of the Weber State community by following any required mitigation protocols that reflect the university's core value of respect for other people. I understand what is expected of me, the risk of exposure to COVID-19, and that no one can guarantee there will be no transmission of communicable diseases. I also understand that I must use common sense and wise judgment to help protect myself and others' health. I further understand that Weber State University will make appropriate accommodations when warranted as well as enforce rules according to existing policies (See PPM 6-22, The Student Code). Violation of these requirements may result in removal from the classroom (or other spaces) or lead to disciplinary action under the Student Code. Finally, I recognize that
requirements, courses, and other elements of university services may be revised or suspended at any time as conditions change.

University-wide course policies are listed here:
https://www.weber.edu/wsuimages/academicaffairs/Forms/DigitalAddendumtoCourseSyllabus.pdf